Introduction to the special issue Special issue on Behavioral Public Economics

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Abstract
The workshop of the Association for Public Economic Theory on behavioral and experimental public economics was held at Ecole Normale Superieure de Lyon, Universite de Lyon, from June 24 to June 26, 2008. Thirty papers were presented in addition to keynotes by Charlie Plott and John List. The focus of the workshop was to test theoretical models using experimental methods to increase our understanding of the efficiency of mechanisms supporting the provision of public goods, social cooperation, and voting systems. This special issue aims at showing how lively and diversified the ongoing experimental research in public economics has come to be. We highlight three topics in particular: the power of voting and legal enforcement systems, the efficiency of various institutions to support cooperation in social dilemma games, and auctions.

The workshop of the Association for Public Economic Theory on behavioral and experimental public economics held in Lyon in 2009 attracted a large audience of public economists interested in exploring the behavioral foundations of individual and collective decision-making in the context of public economics. By allowing the possibility of testing theoretical models, experimental methods have significantly increased our understanding of major issues in public economics such as the relative efficiency of various institutions supporting the provision of public goods and cooperation, mechanism design for public policies or voting systems. This special issue demonstrates how lively and diversified the ongoing experimental research in public economics has come to be. Among the numerous submissions to this issue, we have selected eight papers that illustrate various facets of behavioral public economics. The contributions to this special issue focus on three main sets of questions: what are the power and the limitations of voting and legal enforcement systems, especially in terms of enhanced cooperation? Can one improve the provision of public goods by allowing sequential contributions, a mix of sanctions and rewards, or multiple punishment stages? Can speculation be used as a collusion-breaking device in auctions and is the potential hypothetical bias in valuation tasks without incentives originating in the preference elicitation method or in the preference formation?

The first set of papers investigates the interactions between legal and social sanctions and the power and limitations of voting systems. Legal norm enforcement is in many cases and ineffective deterrent due to relatively low risks of detection, On the other hand, a significant body of experimental evidence has been collected in the last decade suggesting both the importance of decentralized sanctions and the disciplining effect of these social sanctions on individuals' behavior in situations where the society faces a social dilemma. In such an environment, people have the opportunity to punish their group members based on their level of cooperation, i.e. their contribution to a public good. Usually, centralized and decentralized sanctioning institutions are studied in isolation although they coexist in most real settings. Therefore, it is difficult to assess their relative influence on human behavior and to compare their efficiency *ceteris paribus*. The first paper of this issue by Sebastian Kube and Christian Traxler offers a fascinating experimental analysis of the relationships between legal and social norm enforcement, in examining whether these institutions are complements or substitutes. Their experimental design allows them to measure to which extent the existence of a legal enforcement institution affects the individuals' willingness to implement decentralized sanctions to their group members. The baseline treatment consists of a standard public good game without any legal rule but in which group members can sanction their group members at a cost to themselves. A second treatment introduces a legal enforcement institution that sanctions any detected deviation from the optimal contribution to a public good after players have decided on exerting their right to sanction group members. The design is also original in that the strategy method is used to elicit the players' willingness to condition their sanctioning behavior on various possible triples of contributions of their group members. Interestingly, Kube and Traxler find that the introduction of a legal institution crowds-out the social norm enforcement without eliminating it. Their experiment also reveals that a higher level of cooperation is achieved when the legal institution complements the decentralized enforcement institution. This evidence in favor of combining legal and social sanctions deserves all the more attention as a higher cooperation is achieved at a lower overall cost.

In the first paper, sanctions resulted either from the law or from an individual choice. But one can find many intermediate situations in which a community decides on the regime that governs if and how deviations from a social norm are punished. If the members of these communities share the same social preferences and similar productive characteristics, an agreement should not be very hard to reach. The situation is much more complex when heterogeneity is present. Charles N. Noussair and Fangfang Tan also examine the effect of sanctions on contributions in a public goods game. However, they introduce an environment in which individuals have the opportunity to vote on the implementation of the punishment institution in their group. Therefore, it is not only the enforcement of sanctions that is endogenous, but also the institution itself. A novelty of their experimental design lies in the fact that the players' type is determined by two possible returns from the public goods. Group members vote on whether the sanctioning institution should target the individuals who contributed more than the average of the group or those who contributed less than the average, conditional on their type. The results confirm that heterogeneity reduces the likelihood of reaching a consensus for implementing the most efficient sanctioning institution that targets the individuals who contribute below the average unconditional on their productivity type. Most groups end up with a regime without punishment because individuals vote defensively to avoid to be punished by targeting the other group members' type.

A voting procedure does not necessarily allow individuals to implement more efficient rules, but its very existence may also affect individual behavior after the vote has taken place. This hypothesis could hold not only in the domain of public good provision, but also in the political arena. In particular, one might wonder whether and how the existence of a voting procedure and its modalities condition the behavior of individuals once elected. There is surprisingly little empirical evidence in economics on this issue. Hong Geng, Arne Robert Weiss and Irenaeus Wolff address the question of how the nature of political campaigns can prevent the risk that an elected leader takes full selfish advantage of his position. They have designed an experiment in which one electoral campaign is based on the description of the candidates' personality while another campaign is based on the candidates' explicit promises on future actions if elected. The elected candidate then becomes the decider in a following dictator game with three recipients and his behavior can be compared with that of randomly selected leaders in a control treatment. Surprisingly, experiments with both German and Chinese subjects show that dictators tend to behave more pro-socially in the absence of elections than after campaigns in which no promises are announced. This striking result indicates that personality-based campaigns may reduce the social distance between the elected leader and his voters but may also increase the elected candidate's feeling of entitlement. Another interesting result the authors find is that the existence of promises-based campaign leads to higher dictators' transfers, which cannot be interpreted as being a consequence of an inflation of promises resulting from the electoral competition. This study reveals that the combination of competition, cheap talk, and guilt-aversion increases the power of elections to limit the opportunistic use of power but not as much as theoretically predicted. This study should have interest beyond public economists, especially in political science.

The second set of papers in this special issue aim at contributing to the experimental literature on the design of mechanisms influencing cooperation in situations involving social dilemmas. Various institutions have been considered such as allowing the individuals to communicate before making their decisions, introducing a leader in order to influence the rest of the group through his example or his sacrifice, permitting individuals to punish or to exclude free-riders, or introducing voluntary mobility across groups. Most of these institutions have been shown to improve cooperation but their contribution to social welfare is not straightforward. The three following studies contribute to this analysis.

In most sequential public goods experiments, the selection of leaders is either random or based on past behavior or intrinsic characteristics. Authors have mainly considered leadership by example. There are many instances, however, in which individuals self-select as first movers and this may result in detrimental consequences. Varian (1994) proposed a model in which individuals can decide to move first and thereby commit to free-ride in order to signal to the other players that they will have to contribute more to provide the public goods. Thus, the opportunity to commit first may aggravate the free-riding problem. Daniele Nosenzo and Martin Sefton embed Varian's model in two extended endogenous timing games with either observable delay or action commitment. In the first game, there are two contribution stages and players commit to contribute in the first or the second stage before choosing their actual contribution. In the second game, each player decides on either contributing or waiting. The theoretical predictions are derived for both standard selfish preferences and for inequality averse preferences. Nosanzo and Sefton test the predictions of these games by means of a clever experiment in which the players can choose the timing of their contribution and commit to contribute only once. Interestingly, the results show that most participants avoid committing in the first stage of both extended games contrary to the predictions of the game with observable delay. This demonstrates that the opportunity to commit does not automatically aggravate the free-riding problem. However, when a player with a high value of the public good commits to contribute first, then the total amount of the public good is decreased.

Reprisals in case of deviations from social norms are frequently observed in the laboratory even though they do not belong to the equilibrium of the game. A criticism pointed out initially by Houser, Xiao, McCabe, and Smith (2008) is that sanctions may be detrimental to efficiency in the short run because they destroy resources. The use of rewards instead of sanctions may avoid this difficulty. Nathalie Colombier, David Masclet, Daniel Mirza, and Claude Montmarquette provide an original study in which they compare the impact of rewards and sanctions on international cooperation. Indeed, if one interprets voluntary contributions to public goods as an individual decision, it might be also relevant to use this game to investigate international cooperation in the presence of social dilemmas. One can think of environmental issues but there are many other examples. Colombier *et al.* consider cooperation in counterterrorism in which international security is treated as a public good. This constitutes a very stimulating approach. In their experiment, each country is faced with three possible uses of its resources. It may invest in an international collective action reducing the expected losses from a terrorist attack. Alternatively, it may invest in its own national security, entailing a displacement of the terrorists' targets towards less insured countries. Finally, it can invest in other activities that are not related to security. The results demonstrate that the players prefer investing in their own security than in collective action. On the other hand, the introduction of endogenous sanctions and rewards increases cooperation. While the use of reprisals reduce efficiency, as stated by Houser *et al*. (2008), rewards generate positive effects on welfare and they are much more frequently used by players than sanctions, probably because they expect some reciprocity from other players. These very neat findings support the idea that more effective counterterrorism policies require some institutional coordination.

Andreas Nicklisch and Irenaeus Wolff propose that endogenous punishment in social dilemma situations may be driven more by deviations from an absolute norm than by deviations from a relative norm that fluctuates with the average contribution in the group. This distinction has important implication for the predictive power of theories of pro-social behavior for sanctions in public good games. To address this, Nicklisch and Wolff have designed a public good experiment with multi-stage punishment including a finite but endogenous number of stages. After the group members have decided on their contribution levels to the public account, they can announce whether and to which group members they want to assign punishment points; next, they decide on the punishment they actually implement. The steps of announcements and sanctions can be repeated until players are no longer willing to sanction others. The results show no evidence of counter-punishment in iterated stages of punishment. Instead, they tend to support the influence of an absolute cooperation norm that corresponds to the contribution of the full endowment.

The issue ends with two contributions related to auctions. One paper examines speculation as a collusion breaking device and the other studies the hypothetical bias in the elicitation of preferences with second price auctions. Florence Naegelen, Michel Mougeot, Benjamin Pelloux, and Jean-Louis Rullière analyze auction mechanisms for allocating CO_2 emission permits in the laboratory taking into account the concern for a possible collusion between bidders. They test experimentally the hypothesis that the presence of speculators may break collusion in this market by means of a 2x2 design. In their experiment, two auction mechanisms are introduced: sealed bid auctions with uniform price and ascending clock auctions. In one treatment, high emitters and low emitters participate in the auction and speculation is ruled out, while in the other, a third category of players called non-emitters, is introduced who can not themselves use permits, but can speculate in the market. A spot market for trades opens after the auctions take place. As predicted, the experimental results show that the presence of speculators results in higher auction prices and higher revenues for the sellers in the sealed bid auctions with uniform prices, This may be because the compliance agents tend to adopt outbidding strategies. The impact of speculators is weaker in the ascending clock auctions and prices are lower than under the other auction mechanism. Overall, however, the presence of speculators reduces efficiency under both mechanisms by impeding the allocation of permits to the producers with the highest values.

Finally, the issue closes with a paper that takes a more methodological perspective. Indeed, behavior in auctions may differ according whether choices entail actual monetary consequences or only hypothetical ones. This phenomenon is known as the *hypothetical bias* which could originate either in the preference elicitation method or in the preference formation. Nicolas Jacquemet, Robert-Vincent Joule, Stéphane Luchini, and Jason F. Shogren investigate the origin of the discrepancy between values elicited with or without monetary incentives by comparing bids in the two treatments of two experiments using the same Vickrey auction procedures. In one experiment, they use induced values to study preference elicitation, while in the second, they elicit homegrown values to identify preference formation regarding a real non-market good (the protection of dolphins). According to the treatment, the choices do or do not have monetary implications. Interestingly, Jacquemet *et al*. do not find any evidence of a hypothetical bias when using induced values whereas they observe a substantial hypothetical bias when eliciting homegrown values with much higher bids in the hypothetical than in the incentivized treatment. These findings tend to support to the role of preference formation in driving the discrepancy of valuations with and without monetary incentives. Another lesson is that it is especially important to commit individuals not to violate their budget constraint when one intends to reveal demand for non-market goods properly.

In conclusion, we hope that this special issue will contribute to and encourage the development of behavioral and experimental public economics. This is not only because the following contributions provide fascinating new evidence on public economics issues, but also because they should lead to enriched theoretical models by incorporating these new empirical findings regarding human motivation.

References

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1. Sebastian Kube and Christian Traxler - The interaction of legal and social norm enforcement

2. Charles N. Noussair and Fangfang Tan - Voting on punishment systems within a heterogeneous group

3. Hong Geng, Arne Robert Weiss and Irenaeus Wolff - The limited power of voting to limit power

4. Daniele Nosenzo and Martin Sefton - Endogenous move structure and voluntary provision of public goods: theory and experiment

5. Nathalie Colombier, David Masclet, Daniel Mirza, and Claude Montmarquette - Global Security Policies Against Terrorism and the Free Riding Problem: An Experimental Approach

6. Andreas Nicklisch and Irenaeus Wolff - Cooperation norms in multiple-stage punishment

7. Florence Naegelen, Michel Mougeot, Benjamin Pelloux, and Jean-Louis Rullière - Breaking collusion in auctions through speculation: an experiment on CO2 emission permit market

8. Nicolas Jacquemet, Robert-Vincent Joule, Stéphane Luchini, and Jason F. Shogren - Do people always pay less than they say? Testbed laboratory experiments with IV and HG values